Project Year-End Summary Report

Title of Project: Plants for Native Bees: Pollen DNA Metabarcoding to Identify Key Conservation Targets

Begin answering in the shaded box right beside or below each question and it will expand to accommodate as you type. Use up to a total of two and a half pages for questions 1-8. More detailed presentations, a final report, articles or posters are welcome separately (See final instructions at the end of this form.)*

1. Organization name or Individual who received the grant: Manogya Chandar, University of New Mexico

2. Amount of Grant: $ 1997

4. Was additional outside funding obtained? (check box that applies) Yes ◉ No ☐
Other funding source(s) if you checked "yes." Lewis & Clark exploration fund, UNM Biology research award, Sevilleta summer scholarship

5. Briefly, how was the grant money from the Carter Conservation Fund used?
I utilized grant money to cover the costs of gas during travel to and from field sites, and to purchase field and lab supplies. These funds were essential for successfully conducting my summer field work!

6. Write an abstract or summary of the activities performed and the progress that was made this year on your project. (Save any conclusions, lessons learned, and benefits achieved for the final sections, 7&8.)
I had a successful pilot field season collecting bees at the Sevilleta National Wildlife Refuge (March –October). I conducted biweekly netting surveys at three desert ecosystem sites to net bees directly from their floral hosts, allowing me to build a preliminary network of plant-bee interactions for this region. I collected a total of 101 bees (and counting) despite it being a drier year than expected with a low diversity/abundance of flowering plants. I collected pollen from all of these bees and pinned them, and will begin DNA metabarcoding and bee identification this fall. I additionally submitted my first DNA sequencing run (using Sevilleta museum bees) and received high quality reads, indicating that my methods are successful. I have reached out to the UNM Art & Ecology dept. to find a student that would like to assist me with the creation of the “plants for native bees” guide.

7. How does your project further a Native Plant Society mission area, namely: *plant or ecological education; conservation/restoration of native plants and/or their habitats; adds to botanical research; promotes appropriate use of native plants to conserve water, land and/or wildlife.*
This project represented the first initial work (to my knowledge) to accurately characterize plant-bee interactions in New Mexico using molecular techniques *(botanical research).* As I outlined in my proposal, this work provides us with valuable information on the indirect effects of climate change on native plant persistence, a pathway of vulnerability that has been less researched than direct climate effects *(conservation of native plants).* Characterizing these interactions allows us to shed new light on which desert bee and plant species are under the greatest threat in the face of a rapidly aridifying climate, and spreading this information to the public via engaging art and outreach will further knowledge of these systems (*ecological education*).

8. Any other conclusions, lessons learned, benefits to you, the community or the environment hopefully result from your work as assisted by this grant.

I am excited to continue data analysis through the fall and spring, but have already characterized some key associations and built a preliminary network using netted bee specimens. I will spend the rest of fall identifying bees to make interactions more resolved, and analyzing sequencing data so I can supplement my netted associations with metabarcoding associations. I have formed valuable relationships with many NMNPS members through attending this year's conference in Silver City, NM and am excited to continue presenting at these meetings. I am excited to continue building relationships with the Native Plant Society.

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Final Instructions

Please send your completed form as a PDF email attachment to cartergrantapps@gmail.com by November 1, 2026.

** To remain in good standing for any future funding from the Native Plant Society of New Mexico, we ask that you educate our membership more fully in some way. This could be an article (250 words minimum, at least 1 high resolution illustration or photo) for our newsletter, **or** a paper or electronic copy or link to a published article connected with the past year's work, **or** by making an educational and visual presentation to one of our chapters. Contact information for our 7 area chapters is found on our website at www.npsnm.org under the Chapters tab.*

What are your intentions in this regard? Upon completing data analysis in the Spring, I am excited to 1) speak at an Albuquerque chapter meeting, 2) provide a newsletter article, and 3) present a poster at the 2027 conference in Santa Fe. I will plan to reach out to the responsible chapter members once my analysis has been finalized, no later than May 2027.

This year end report is submitted by (Type your name) Manogya Chandar

My typed name is equal to my handwritten signature in testifying to the accuracy and truth of this report to the best of my knowledge today.

email address mchandar@unm.edu

Date 10/15/2026

Please contact us again at cartergrantapps@gmail.com if you have any questions or alternate suggestions.